

REMARKS

The application was filed with 20 claims. Claims 10-20 were cancelled as non-elected claims in response to a prior restriction requirement. Claims 1-9 are maintained in the application, and new claims 21-29 are added in this paper. Claims 1-9 and 21-29 are thus now pending in the application for examination.

Claim 1 requires that

at least one of a length dimension and a width dimension of the at least one bond magnet in a cross-section orthogonal to an axis of the rotor is greater than a corresponding dimension of the at least one of the slits

in which the magnet is embedded. This limitation requires that the magnet be *larger* in at least one a width and length dimension, than the slit in which it is embedded.

The Examiner alleges that such a configuration is depicted in Figure 1 of the Nagate reference, an allegation that the Applicant respectfully traverses. In fact, the magnet in Nagate is *smaller* in both the length and the width dimension than the slot in which it is disposed. This is shown in Nagate's Fig. 2, and described in more detail in Nagate's specification.

As shown in the drawing, the permanent magnets 3, 3 for the field have their surfaces partly engaged with one side of the protuberances 9 when press-fitted, and the protuberances 9 suffer from deflection or plastic deformation in the outward directions R due to a dimensional difference of the magnets and are held within the slots 6, 6. *The protuberances 9 prevent the permanent magnets 3, 3 for the field from contacting to the bridges 10 and the inner periphery-of the slots 6, 6 on the side of the rotatable shaft.* Therefore, the friction due to the contact between the permanent magnets 3, 3 for the field and the slots 6, 6 is small, and the permanent magnets for the field can be inserted by a small force and positioned. *As shown in the drawing, when press-fitted, the outer periphery of the permanent magnets 3, 3 for the field*

engages with one side of the protuberances 9 to prevent the permanent magnets 3, 3 for the field from coming out, and no extra force is applied to the bridges 10.

Nagate patent, at column 8, lines 19-26 (emphasis supplied).

Figure 2 shows clearly that the magnet is smaller lengthwise than the slot, so that the magnet 3 does not touch the slot edges inside the bridges 10. The magnet 3 is smaller than the slot, moreover, in the widthwise direction, which is why “the friction due to the contact between the permanent magnets 3, 3 for the field and the slots 6, 6 is small.” If it weren’t for the protuberances 9 inside the slot, the magnets would probably fall out of the rotor. The protuberances 9 are described as being necessary “to prevent the permanent magnets 3, 3 for the field from coming out.” The magnets must certainly be smaller than the length and width of the slit. If they weren’t, the protuberances could not “prevent the permanent magnets 3, 3 for the field from contacting to the bridges 10 and the inner periphery of the slots 6, 6 on the side of the rotatable shaft,” as the specification describes.

The cited reference thus fails to teach that “at least one of a length dimension and a width dimension of the at least one bond magnet in a cross-section orthogonal to an axis of the rotor is greater than a corresponding dimension of the at least one of the slits,” and claim 1 is distinguished from the art for that reason.

Nagate’s magnet, moreover, is not a bond magnet. The Examiner notes that the Matsuo magnet is a bond magnet, and submits that it would have been obvious to one of ordinary skill in the art to incorporate such a magnet in Nagate’s rotor “for the purpose of improving elastic characteristics of the magnet.” *Office Action*, at page 3. This allegation is likewise respectfully traversed.

A bond magnet is useful in the claimed configuration because the magnet’s compressibility allows it to be pressed into the slot and held there securely with a tight engagement – *i.e.*, little or no air gap – between the magnet and the inside surfaces of the slot. Nagate, on the other hand, teaches an incompressible *rigid* magnet, with deformable structure (the protuberances) inside *the slot*. A compressible bond magnet would not only be unnecessary in Nagate’s device – it

would in fact be counterproductive. A compressible magnet might not deform the protuberances reliably – the magnet itself being subject to deformation – and the magnet could well be lose or even slide out of the slot.

The particular elastic characteristics of a bond magnet are therefore unnecessary and even unhelpful as a potential modification to Nagate's device. A person of ordinary skill in the art thus would not have regarded it obvious to use a bond magnet in a device like Nagate's. In fact, Nagate – with its deformable protuberances – suggests that such a modification would be unhelpful at best. Applicant submits that claim 1 is patentable over the art cited against it for this reason as well.

Each of claims 2-9 depends from claim 1, and these claims are thus believed patentable for the same reasons as those described above in connection with claim 1.

New claims 21-29 are generally similar to claims 1-9, except that claim 21 additionally requires that the rotor comprise “a plurality of stacked plates.” A compressible bond magnet is particularly advantageous with such a rotor, because the inside walls of slits in such a rotor are inevitably somewhat rough and uneven due to imperfect alignment of the individual plates. When a compressible, bond magnet is press fit into the slot, the magnet deforms to conform itself tightly to the irregularities in the walls. Air gaps between the magnet and the slit walls are thereby avoided, which increases the magnetic efficiency of the motor.


In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 337-6711 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
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